

WARM UP

Determine the local maximum and minimum values of

$$f(x) = x^4 - 8x^3$$

$f'(x) = 4x^3 - 24x^2$
 $0 = 4x^2(x-6)$
 $x = 0 \text{ or } x=6$
 Local min @ $x=6$
 $f(6) = 6^4 - 8(6)^3$
 min = -432

	$4x^2$	$x-6$	$f'(x)$
$(-\infty, 0)$	+	-	- Dec
$(0, 6)$	+	-	- Dec
$(6, \infty)$	+	+	+ Inc

} Min

Jan 9-1:43 PM

Calculus 120
Unit 4: Applications of Differentiation

May 2, 2019: Day #8

1. Quiz Monday (local and ^{global} absolute Max and Min values, intervals of increase and decrease, intervals of concavity, inflection points, graph.

2. Assignment Due Monday

Jan 9-1:43 PM

Curriculum Outcomes

C8: Use Calculus techniques to sketch the graph of a function.

C9: Use Calculus techniques to solve optimization problems

C11: Use Calculus techniques to solve problems involving related rates.

Jan 24-9:32 AM

For the function $f(x) = \frac{2x}{(1-x)^2}$, determine the domain, all intercepts, any asymptotes, intervals of increase and decrease, local max and min values, intervals of concavity, points of inflection, and then sketch the graph.

$f(x) = \frac{2x}{(1-x)^2}$ $f'(x) = \frac{2+2x}{(1-x)^3}$
 Domain: $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$
 VA @ $x = -1, x = 1$
 X-int: $y=0 \Rightarrow x=0$
 Y-int: $x=0 \Rightarrow y=0$
 H.A. $\lim_{x \rightarrow \pm\infty} \frac{2x}{(1-x)^2} = \frac{2}{1} = 2$
 H.A. @ $y=2$

$f'(x) = \frac{2+2x}{(1-x)^3}$ $f''(x) = \frac{2+6x}{(1-x)^4}$
 $0 = 2+2x \Rightarrow x = -1$ (not in domain)
 $0 = 2+6x \Rightarrow x = -\frac{1}{3}$
 Local min @ $(-\frac{1}{3}, 0)$

$f''(x) = \frac{2+6x}{(1-x)^4}$ $f''(x) = 0 \Rightarrow x = -\frac{1}{3}$
 Inflection point @ $(-\frac{1}{3}, \frac{1}{4})$

Apr 26-2:51 PM

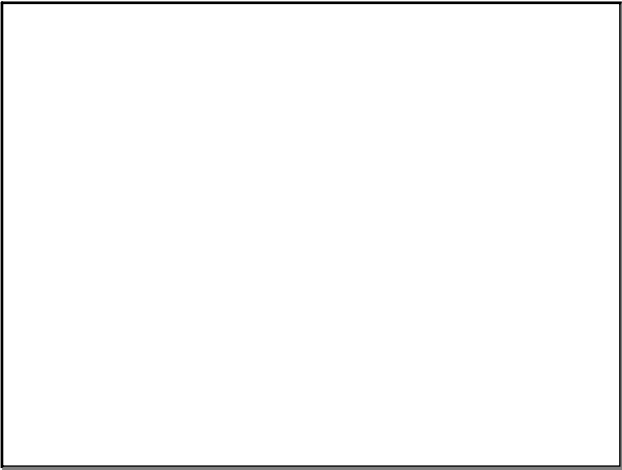
Assignment!

Textbook:

Jan 13-9:38 PM

$\frac{x}{x^2-1}$

Apr 26-3:37 PM



May 2-10:43 AM

Attachments

2.1_74_AP.html



2.1_74_AP.swf



2.1_74_AP.html